CE
EXAMINATION
CERTIFICATES

n° 51BL1800
Mod. Z 420A
Z 520A

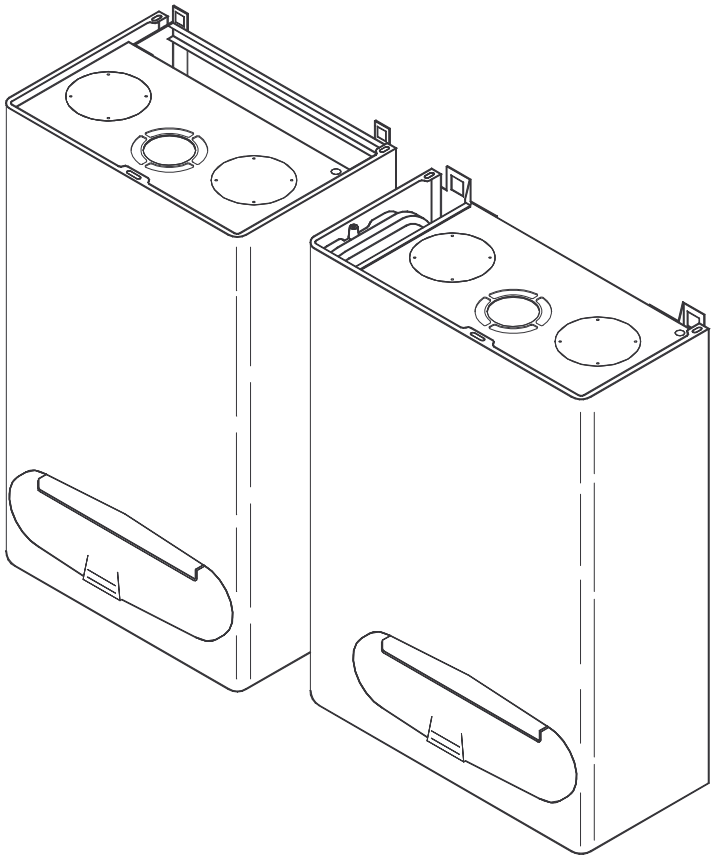
n° 51BL1802
Mod. ZF 420A
ZF 520A

EFFICIENCY
RULES

n° 51BL1801DR
Mod. Z 420A ★★
Z 520A ★★

n° 51BL1803DR
Mod. ZF 420A ★★
ZF 520A ★★

WALL-MOUNTED COMBINATION BOILERS HIGH EFFICIENCY



SARIgas

SERIES *Zoom*

Mod. Z 420A – Z 520A – ZF 420A – ZF 520A

INSTRUCTIONS FOR:
- USE AND MAINTENANCE.
- INSTALLATION.

TO OBTAIN THE BEST PERFORMANCE FROM THE BOILER, PLEASE READ THESE INSTRUCTIONS CAREFULLY.
THIS BOOKLET MUST BE KEPT WITH THE COMBINATION BOILER SO THAT IT CAN BE CONSULTED BY THE USER AND QUALIFIED PERSONNEL.

USER INSTRUCTIONS

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USER INSTRUCTIONS

You have placed your trust in a firm specialised in heating and producing hot water for domestic use. This boiler has been designed to respond to European standards. It has been manufactured with utmost care, conforming to current safety standards.
Each appliance has been tested when working, and the inspector who carried out the tests has signed the warranty certificate enclosed with the appliance documents.

In the case of problems, please return the warranty card (the original or a copy) to assist our research.

IMPORTANT:
- **The boiler and document packaging material (foamed polystyrene, plastic bags) must be kept out of the reach of children, as they are a potential source of danger.**
- **Children or the disabled must not use the appliance without supervision.**
- **Yearly maintenance must be carried out on the boiler together with a two-yearly check of the heating system, controlling the safety components.**
- **The sealed components must not be interfered with or removed.**
- **Do not store chemical and/or inflammable substances in the room where the boiler is installed.**

USE:
- **Incorrect use of the boiler can cause breakdown or poor working of the appliance.**
- **If there is a smell of gas, do not touch the switches or any other electric appliances (telephone – intercoms – electric fans - etc.).**
  Immediately open all the doors, windows and any other opening to grant rapid ventilation of the room.
  Turn off the central gas outlet valve on the meter or the bottle valve. Immediately call a qualified technician to check the problem.

BEFORE USING THE BOILER

- **The first start up of the boiler must be carried out by an authorised technician and the warranty certificate must be correctly filled in.**
- **Read these instructions carefully.** By so doing, you will obtain the maximum performance from the boiler, saving in energy too.

Control panel Zoom Z 420A – Z 520A – ZF 420A – ZF 520A

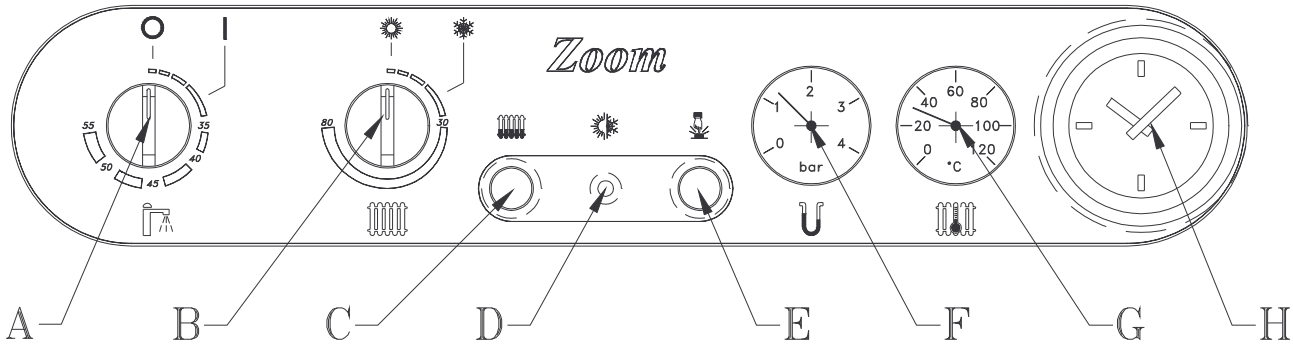

Fig.1

A – On/Off hot water selection switch
B – Summer/Winter heating setting selector switch
C – Heating water missing pilot light
D – Ready for working pilot light
E – Boiler reset pilot light button
F – Pressure gauge
G – Boiler thermometer
H – Programming clock (optional)

STARTING UP THE BOILER

IGNITION OF THE MAIN BURNER (Fig. 1)

- Check that the water pressure to the system is 1 bar (pressure gauge F, Fig. 1). If the pressure is below 0.5 bar, fill the boiler again (Fig.23/B).
- If the gas tap is installed, check it is open.
- Turn off the electric bipolar supply switch to the boiler, which is fitted on the outside of the appliance.
- Turn knob **A** to position **I**.
- The boiler is now ready to work normally. Main burner ignition is controlled by the boiler thermostat and/or the room thermostat in the WINTER programme, or by drawing off running water, if required.

WORKING

Winter position ❄ HEATING PROGRAMME

- Turn knob **B** to the WINTER position ❄ (to the temperature you desire) and check that you can hear the circulation pump working.
- If the system has a room thermostat fitted, it must be set to the maximum temperature.
- The burner fires automatically and the heating cycle starts up.
- Set the room thermostat to the desired temperature.

HOT WATER REQUIRED

- Turn on any hot water tap.
- When the requirements for hot water exceed 2.8 l./min., the boiler automatically goes into hot water production.
- Turn the temperature setting knob **A** to the temperature you think best.

Summer position ☼ HOT WATER ONLY PROGRAMME

- Turn the knob **B** to the SUMMER programme ☼.
- Turn on any hot water taps.
- When the requirements for running hot water exceed 2.8 l./min., the boiler automatically gets ready to produce hot water.
- Turn the temperature setting knob **A** to the temperature you think best

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The temperature of the hot water coming from the boiler, depending on the drawn off water capacity (with cold water intake at 59°F)

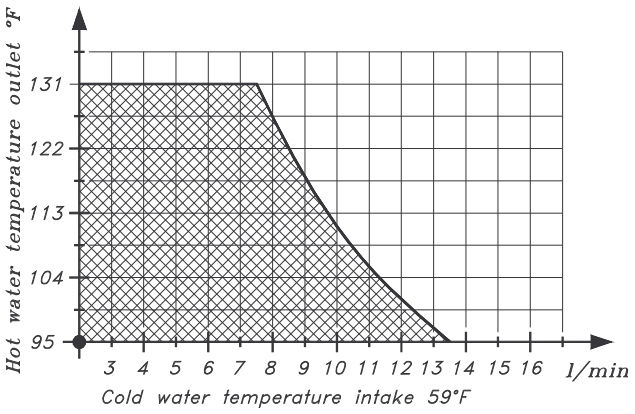


Fig.2

TURNING OFF

For short periods (12 – 24 hours)

- Turn the selector switch **A** to position **'O'.**

For long winter periods

The Zoom series of boilers are fitted with an "**automatic antifreeze protection system"** in the heating and hot water circuit, which triggers when temperatures fall below 3 – 5°C.
This function activates the pump and the gas burner (at minimum rated output), **as long as** the boiler is electrically driven and the knob **A,** Fig, 1, is turned to **"I".** When a temperature of around 35°C is reached in the heating circuit, the "antifreeze system" is automatically deactivated. It is good practice, however, to protect the heating circuit with a suitable, specific chemical additive (antifreeze).

If the system is not protected with antifreeze, and the gas valves must be turned off upstream and the electrical supply to the boiler turned off, empty the heating and the hot water circuits to avoid damage to the various components, the heating system (pipes, radiators, etc.) and the hot and cold water supply pipes.

USEFUL SUGGESTIONS FOR USING THE BOILER

Central heating

If a room thermostat has not been installed

- Set the boiler temperature on the basis of the room temperature.

If a room thermostat has been installed

- Set the boiler temperature (knob B, Fig. 1) between 50 - 80 °C
- Turn the room thermostat to the desired temperature

Water pressure in the system (see F Fig.1)

- Pressure, when cold, must not go below 0,7 bar.
- Pressure, when hot, must be not exceed 2 bar.
- Too frequent fillings, can be caused by boiler leaks. In this case, call out the installing firm.

N.B. If the system is subject to frequent emptying and, therefore, frequent filling, the water must be duly treated and the **"hardness"** of the water, cause of lime scaling that damages the boiler, must be reduced to a minimum.

Producing hot water (see A Fig.1)

- **If the main temperatures are kept at satisfactory levels, gas is saved and the life span of the specific exchanger is extended, as the formation of lime is considerably reduced.**
- Set the outlet hot water temperature directly on the boiler it isn't advisable to reduce the water taking to low levels because the burner could switch off or the temperature couldn't keep the fixed valve.
- If the system has a "single command" type valve, the valve must be completely turned to the "hot" position, this way the temperature of the outlet water is stabilised.

If the boiler locks-out repeatedly:

- If after a few attempts at unblocking the ignition device **E** Fig.1, the burner does not fire, it could be due to a fault or due to a failure in the gas supply, call out the installing firm.

N.B. Do not insist in attempts at **unblocking, unless at least 10 minutes have passed between one attempt and another.** The continuous outlet of gas during ignition can cause an elevated build up of gas in the combustion chamber and therefore, when it lights up, an explosion. After repeated attempts, we recommend ventilating the room by opening the doors and windows and immediately calling a qualified technician.

MAINTENANCE

External cleaning

- To clean the outside of the boiler, we advise using non-abrasive detergents.
- Do not use solvents or inflammable products.
- Use protective gloves for cleaning, against sharp or cutting edges.
- We advise cleaning only once the boiler has been turned off for at least 30 minutes, to avoid exposure to overheated parts.

Boiler maintenance

- The minimum compulsory maintenance involves a yearly visit by a qualified technician who ascertains the correct working of all the safety devices, and cleans the internal working parts, checks and sets if necessary.
- This yearly maintenance is prescribed and compulsory by Law, and guarantees the perfect working of the appliance and constant high performance.
- Request the maintenance chart from an Authorised Service Centre.

Maintenance agreement

- The yearly visit can be carried out on the basis of a subscription, which can cover spare parts, labour, consumption material.

Fumes exhaust pipe

- The fumes exhaust pipe must be controlled **yearly** (by a qualified technician) who checks the efficiency of the pipe both for air-tightness and draft. He also inspects the ventilation grid in the boiler room.

GAS CHANGE

If the supply gas to the boiler is changed, certain changes must be made to inside parts of the boiler, and the gas settings must be carried out again. **Qualified and authorised technicians can only carry out these changes.**

VENTILATION OF THE ROOMS

VENTILATION OF THE ROOM IS COMPULSORY AND INDISPENSABLE FOR THE FOR SERIES
"*Zoom" Z 420A Z 520A* (Class B_{11BS} appliances)
"*Zoom" ZF 420A ZF 520A* (Class B_{22} appliances) for installation see Page 14,15.

These boilers must be installed in suitable surroundings, which guarantee the correct level of air intake for combustion; they must be connected to a flue gas evacuation circuit (flue pipe).

Adhere to local legislation regarding the ventilation required for the room.

Air vents on the outside walls of the where the boiler is installed:

- Must have a free net air passage that conforms to current legislation in size;
- Must be made in such a way that the inside and outside vents cannot be covered or blocked.
- Must be protected with grids or wire net, etc., but the protection must not reduce the size of the passage as indicated above.
- Correct aeration can be obtained from several vents, as long as the total net air passage corresponds to current legislation.
- If the vents cannot be made near to the floor, the section of the vent opening must be increased, as indicated in the specific standards.
- If there are other elements in the boiler room that draw in air to work, the section of the vent opening must be adequately increased.
- If the boiler is installed in a room that contains a cooking hob without safety device, as it does not use an open flame, the ventilation vents must be increased.
- The suction hood is always to be considered as an electric fan.
- An open fireplace must have its own air draft, otherwise gas appliances of the **B_{11BS}** type cannot be installed in the room.

If an external opening cannot be made, air flow from an adjacent room is allowed as long as the room is not in negative pressure due to the presence of another draft (fireplace or stove) or another suction appliance, and it is not used as a bedroom.
Zoom Z 420A – Z 520A boilers are fitted with a flue gas safety thermostat which, if there is poor draft in the flue passes, permanently blocks the gas flow to the main burner .If the flue gas safety thermostat triggers, turn the boiler off and immediately contact a qualified technician to test the boiler.

IMPORTANT: Under no circumstances must the flue gas safety thermostat be blocked, interfered with or removed (see Fig. 3).
The opening must not be even partially blocked, to maintain adequate hygiene and safety levels in the room; if the boiler room (Zoom Z 420A – Z 520A) is not well ventilated, the main burner could halt frequently, triggering the flue gas safety device of the boiler. If this happens, contact a qualified technician immediately to carry out the necessary tests.

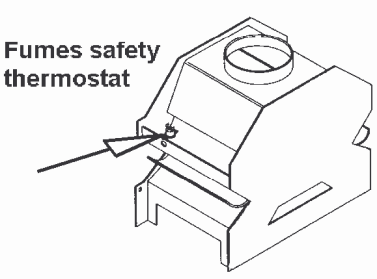


Fig.3

IMPORTANT

"**B_{22}**" (ZF 420A; ZF 520A) boilers require suction of the combustion air directly from the room where they are installed. Therefore, it is essential that the air suction grids, fig. 11 page 12, are never blocked for the boilers to work properly.
Do not close the boiler in hanging cupboards that are not sufficiently ventilated, and do not place other items on top of the boiler.
Any electric, hydraulic and gas circuit parts must only be replaced with original SARIgas spare parts.
Only authorised and qualified SARIgas technicians must replace any faulty parts.
SARIgas declines all responsibility for damage caused by the improper use, faulty installation and the use of spare parts that are not originals for the boiler.

WORKING PROBLEMS

(For tests to be carried out inside the boiler contact the Authorised Service Centre).

THE BOILER DOES NOT WORK AND THE PILOT LIGHT "D", FIG. 2, IS TURNED OFF

- Fault with the supply wire; contact the Authorised Service Centre.
- If the supply wire is damaged, it must be replaced with a special wire that can be supplied by from the Manufacturer or by an Authorised Service Centre.

THE BOILER WORKS INTERMITTENTLY AND THE PILOT LIGHT "D" FIG. 1, FLASHES ON AND OFF

- The electronic circuit of the boiler automatically controls the correct working of some of the internal components, and the high and low temperature alarms of the heating circuit, by flashing the pilot light "D" fig. 1, on and off. If this light is flashing and the boiler works intermittently, wait at least 30 minutes, after which if the pilot light is still flashing call the Authorised Service Centre to carry out the necessary checks.

THE MAIN BURNER DOES NOT FIRE FOR HEATING OR FOR PRODUCING HOT WATER

- Knobs **A** and **B** Fig. 1, of the boiler are set too low.
- The room thermostat (if fitted) is set too low.
- The safety limit thermostat has triggered.
- The manually rearmed **flue gas safety** limit thermostat has triggered (for models ***Zoom*** Z 420A - Z 520A).
- Gas supply blocked, for all models (the **E** pilot light comes on, Fig. 1).
- The ignition and flame control device is faulty (contact the Authorised Service Centre).
- Water capacity too low (less than 2.8 l./min.).
- Faulty electronic card (contact the Authorised Service Centre).

THE MAIN BURNER DOES NOT REMAIN ALIGHT

- Poor gas supply in the pipes to the meter/boiler or low gas pressure to the burner.
- The minimum gas pressure to the burner or ignition is too low.
- The electric PHASE /NEUTRAL line is not correctly connected to the boiler (inverted) or the earth connection is missing.

THE MAIN BURNER GOES OUT AFTER BEING ALIGHT FOR JUST A FEW MINUTES

(Just models ***Zoom*** Z 420A - Z 520A)

- The fumes safety thermostat (Fig. 3) has triggered. Contact an Authorised Technician immediately to check the boiler and/or the flue.

THE BOILER IS NOISY WHEN THE MAIN BURNER IS ALIGHT

- **Elevated** gas pressure to the burner.
- Water circulation to the heating system is **too low.**
- Faulty circulator.
- Exchanger scaled with lime.
- Boiler valves (if fitted) are closed.
- Electricity supply could be less than 195 V.

SMELL OF GAS

- Turn off the main gas valve.
- Open the doors and windows to aerate the room.
- Do not turn on any switches or any other electrical appliance (telephone – intercom – electric fans – etc.).
- Immediately call the Authorised Technician to carry out the necessary checks to the system.

INSTALLATION INSTRUCTIONS

IMPORTANT: The packing elements (foamed polystyrene, plastic bags) must be kept out of the reach of children, as they are a potential source of danger.

This boiler has been designed to respond to European standards. It has been manufactured with greatest care, in compliance with safety regulations. Each appliance has been tested when working, and the inspector who carried out the tests has signed the warranty certificate enclosed with the appliance documents.
Check that the boiler supplied corresponds perfectly with its intended use.
-Indications of the type of boiler and gas to be used are given on the plate fitted behind the control panel, outside the boiler and on the boiler packaging.
The products described in this manual have been correctly manufactured in conformity with current legislation.
The boilers are manufactured in accordance with EN specific safety Standards for fuel gas, as per Directive 90/396/CEE regarding gas appliances and Directive 92/42/CEE regarding performance levels of new hot water boilers, that are driven by liquid or gas fuels.
This appliance must be installed in accordance with the following Statutory Regulations and British Standards Codes of Practice:

Building Regulations (England and Wales). The Buildings Standards (Scotland) Regulations. Gas Safety (Installation and Use) Regulations 1984. Current I.E.E. Wiring Regulations and Local Water Authority By-Laws.

Codes of practice: BS.6891 –Installation of low pressure gas pipework;
BS.6798 –Installation of gas fired hot water boilers of a rated input not exceeding 60 kW.
BS.5449:1 –Forced circulation hot water system (domestic central heating system smallbore and microbore).
BS.5546 –Installation of gas hot water supplies for domestic purposes (2nd family gases).
BS.5440:1 –Flues (for gas appliances of rated input not exceeding 60 kW).
BS.5440:2 –Air supply (for gas appliances of rated input not exceeding 60kW).

TECHNICAL SPECIFICATIONS	**Mod. *Zoom***	**Z 420A – Z 520A**	**ZF 420A – ZF 520A**
Configuration		B_{11BS}	C_{12} C_{32} C_{42} C_{52} B_{22}
Rated heat throughput (P.C.S.)	Btu / h - kW	97,490 – 28.6	97,490 – 28.6
Reduced heat throughput (P.C.S.)	Btu / h - kW	47,275 – 13.86	48,745 – 14.3
Rated heat output working	Btu / h - kW	80,000 – 23.45	80,170 – 23.49
Reduced heat output working	Btu / h - kW	36,845 – 10.8	38,210 – 11.2
Working thermal efficiency at rated power (P.C.I.)	%	90.2	90.4
Energy efficiency		★★	★★
Working thermal efficiency at 30% of rated power (P.C.I.)	%	87.4	88
Lose of heat from casing (Δt 50°C)	%	2.5	2
Lose of heat through the chimney with the burner alight	%	5.8	6.5
Lose of heat through the chimney with the burner turned off	%	0.8	1.1
Max. working pressure of the heating circuit	P.S.I. - bars	42.67 - 3	42.67 - 3
Adjustable temperature in heating mode	°F - °C	86 / 176 - 30 / 80	86 / 176 - 30 / 80
Expansion tank – total volume	gals - litres	1.32 / 1.54 - 6 / 7	1.32 / 1.54 - 6 / 7
Rated heat throughput in sanitary mode (P.C.S.) D.H.W.	Btu / h - kW	97,570 – 28.6	97,570 – 28.6
Reduced heat throughput in sanitary mode D.H.W.	Btu / h - kW	36,504 – 10.7	36,504 – 10.7
Rated heat output in heating mode D.H.W.	Btu / h - kW	80,000 – 23.45	80,716 – 23.62
Reduced heat output (working) in sanitary mode D.H.W.	Btu / h - kW	31,727 – 9.3	31,727 – 9.3
Adjustable temperature in sanitary mode	°F - °C	95 / 131 - 35 / 55	95 / 131 - 35 / 55
Max. water available with continuous working (Δt 35°C)	gals - litres/min	2.13 – 9.6	2.13 – 9.6
Specific flow rate (EN 625)	gals - litres/min	2.51 - 11.3	2.51 - 11.3
Minimum sanitary water flow rate	gals - litres/min	0.62 – 2.8	0.62 - 2.8
Minimum / maximum D.H.W. sanitary water pressure	P.S.I. - bars	0.02 / 1.55 - 0.1 / 7	0.02 / 1.55 - 0.1 / 7
Electric connections	V~ / Hz	230 / 50	230 / 50
Rated absorption	A	0.5	0.8
Electric appliance protection	IP	X4 D	X4 D
Maximum electricity consumption	W	90	140
CO_2 content (methane) "B" type boilers	% rated – reduced	4.8 – 2.7	---------
CO_2 content (methane) "C" type boilers ●●●	% rated – reduced	---------	5.75 – 2.75
CO_2 content (LPG G30) "B-C" type boilers	% rated – reduced	6 – 3.6	6.95 – 3.85
Flue flow rate in weight (methane: G20)	g/s rated – reduced	20.6 – 17.2	17.5 – 17.4
Flue flow rate in weight (LPG: G30)	g/s rated – reduced	19 – 15	16.7 – 14.5
Fume temperature (methane: G20)	°C rated – reduced	105 – 90	102 – 93
Fume flow rate in weight (LPG: G30)	°C rated - reduced	104 – 83	116 – 105

●●● With coaxial pipe, max. length 3 metres.

INSTALLATION REGULATIONS

- Installation must by carried out by a qualified technician in conformity with current legislation, local standards and with all due dilegence.
- The boiler must not be installed in rooms used for storing inflammable substances (paper, rags, solvents, polystyrene, plastic, etc.).
- Do not install the boiler in spaces where it is exposed to direct contact with cooking steam, in damp spaces, in rooms subject to chemical vapours, such as laundries, hairdressers, etc.

POSITIONING THE BOILER

- This depends on the position of the fume exhaust duct fitting (fig. 4, 5 and 7) and **it must be installed in a covered and protected area,** in accordance with local legislation.

FUME EXHAUST

- The flue pipe must be sized conforming to current legislation, and made of suitable materials.
- It is important that the first stretch of the pipe is vertical, with a length not less than 2 times the diameter of the flue pipe coming from the boiler (for "**B_{11BS}**" with natural draft).
- The connector pipe, from the boiler attachment to the flue pipe stack, must be of an adequate section, equal to that one of the boiler connector. It must be adequately waterproofed.
- Installation must allow free expansion and dismantling of the materials.
- The stretch between the connector pipe and the flue pipe must be protected so that condensation water, which could form in the flue pipe, cannot return to the boiler.

FUME EXHAUST FOR BOILERS WITH OPEN CHAMBER FORCED EXPULSION, TYPE "B_{22}"

" B_{22}" boilers work by taking the air to be burnt directly from the room where the boiler is installed, and connected in accordance with the specifications on page 12, fig. 11.

FUME EXHAUST FOR BOILERS WITH SEALED CHAMBER FORCED EXPULSION, TYPE "C"

The "C" type boiler works by drawing the air to be burnt directly from the outside.

- Wall boilers with forced draft can be fitted with either the modular outlet system "COAXIAL FLUE" or with "SEPARATE FLUES", see figs. 9-10 on page 12, and in accordance with the distances given in the tables on page 15.

  In both cases, the flue gases can be expelled and the air drawn in either horizontally or vertically from the wall or the roof, or through a **double chamber flue pipe (only for versions with separate flues,** configuration "C_{42}").

IMPORTANT:

It is ESSENTIAL to guarantee that the products of combustion coming from the flue pipe cannot return into the building or in any other nearby room, through the ventilators, windows, doors, natural air infiltration or through forced ventilation air conditioning systems.

POSITIONING THE FUME EXHAUST TERMINALS
FORCED FLOW SEALED CHAMBER APPLIANCES WITH CONFIGURATION TYPE C12-C52 B22

Terminal position		
A	Below a window	600 mm
B	Below an air vent	600 mm
C	Below the gutter	300 mm
D	Below a balcony (1)	300 mm
E	From an adjacent window	400 mm
F	From an adjacent air vent	600 mm
G	From vertical or horizontal pipes or outlets (2)	300 mm
H	From a corner of a building	300 mm
I	From a recess in the building	300 mm
L	From the ground or another walkway	2500 mm
M	Between two terminals arranged vertically	1500 mm
N	Between two terminals arranged horizontally	1000 mm
O	From a front surface facing outwards without apertures or terminals within a radius of 3 metres from the fume outlet	2000 mm
P	From a front surface facing outwards with apertures or terminals within a radius of 3 metres from the fume outlet	3000 mm

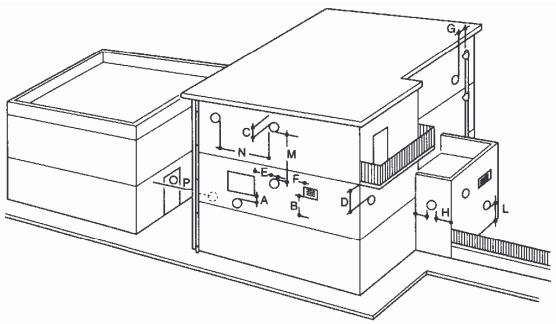


Fig.4

NOTE

1) Terminals below a balcony must be positioned so that the total path of the fumes, from the point at switch they are emitted to the outlet on the external perimeter of the balcony, is no less than 2000 mm.
2) The terminal must be positioned no less than 500 mm from materials sensitive to the action of the combustion products (for example, plastic gutters or downspouts, wooden jetties etc.) unless these material are adequately screened.

Air supply for combustion and ventilation must be provided in accordance with BS.5440:2 regulations.

DIMENSIONS

Mod. Zoom		*Z 420A*	*ZF 420A*	*Z 520A*	*ZF 520A*
A Width	in. - mm	16.73 - 425	16.73 - 425	19.68 - 500	19.68 - 500
B Height fittings centre distance	in. - mm	26.50 - 673	26.50 - 673	26.50 - 673	26.50 - 673
C Depth	in. - mm	11.42 - 290	11.42 - 290	9.05 - 230	9.05 - 230
D Stack Ø	in.- mm	5.12 - 130	3.94 - 100	5.12 - 130	3.94 - 100
E Distance between stack axis-wall	in. - mm	6.77 - 172	7.91 - 201	4.37 - 111	5.51 - 140
F Connection centre distance	in. - mm	14.60 - 371	14.60 - 371	15.43 - 392	15.43 - 392
G Distance between gas fittings /wall centre line	in – mm	4.80 - 122	4.80 - 122	2.40 - 61	2.40 - 61
H Distance between water fittings / wall centre line	in. - mm	5.04 - 128	5.04 - 128	2.64 - 67	2.64 - 67

NATURAL DRAUGHT BOILER (Mod. Z 420A - Z 520A)
B_{11BS} boilers that draw the air directly from the room where they are installed.

OPEN CHAMBER FORCED DRAUGHT BOILER configuration B_{22} (Mod. ZF 420A - ZF 520A).
Boilers that work by drawing the air directly from the room where they are installed.
For the length of the flue pipes, follow the instructions given in the table on page 15 and figures 11-17.

ATTENTION: Permanent ventilation is required for the boiler room, in accordance with current laws.

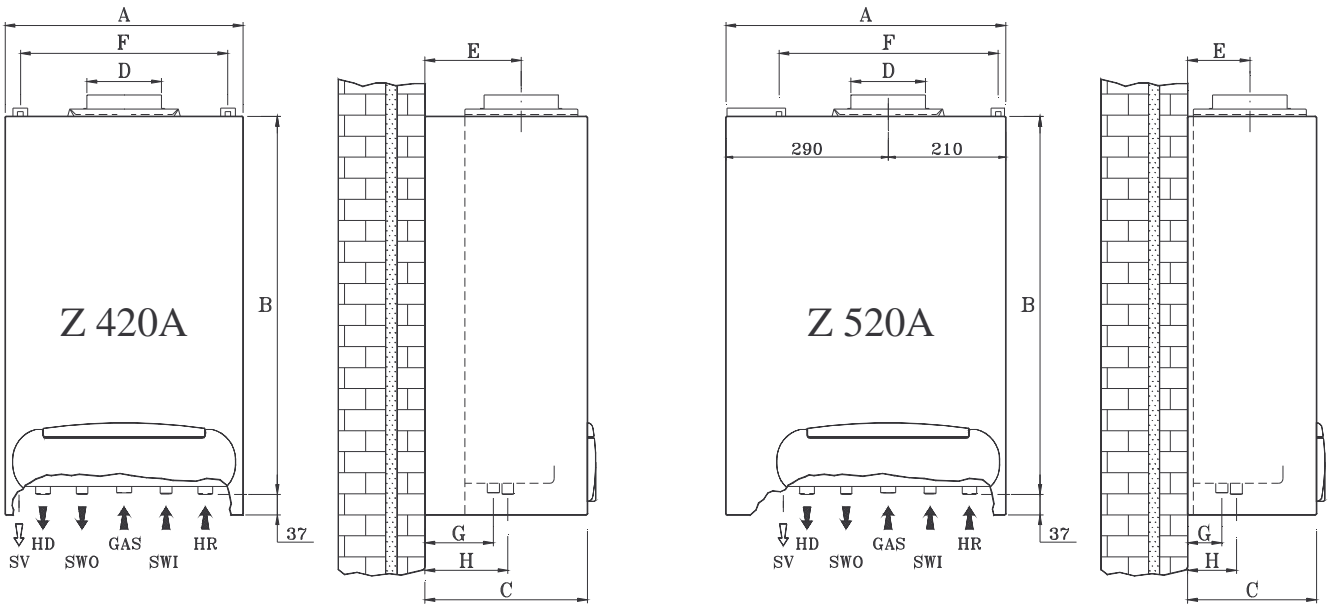
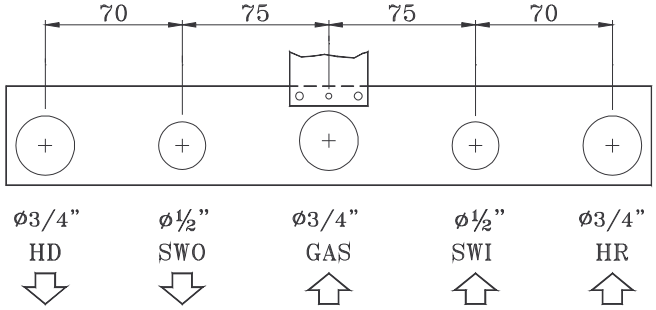


Fig. 5

PREASSEMBLY TEMPLATE FITTINGS LAYOUT (optional)



KEY

HD - Heating delivery Ø ¾"

SWO - Sanitary water outlet Ø ½"

HR - Heating return Ø ¾"

SWI - Sanitary water inlet Ø ½"

SV - Safety valve 3 bars (42.67 P.S.I.)

Fig. 6

FORCED DRAUGHT BOILERS (Mod. Zoom ZF 420A - ZF 520A)

Boilers for C12 - C32 – C42 - C52 type configuration taking the air directly from the outside.

For C_{42} configuration, refer to EN 483 standards, Chapter 8.2.1.4. paragraph "l".

ATTENTION: Ventilation of the room in accordance with current laws.

Boiler with coaxial flue pipe **Boiler with separate flue pipes**

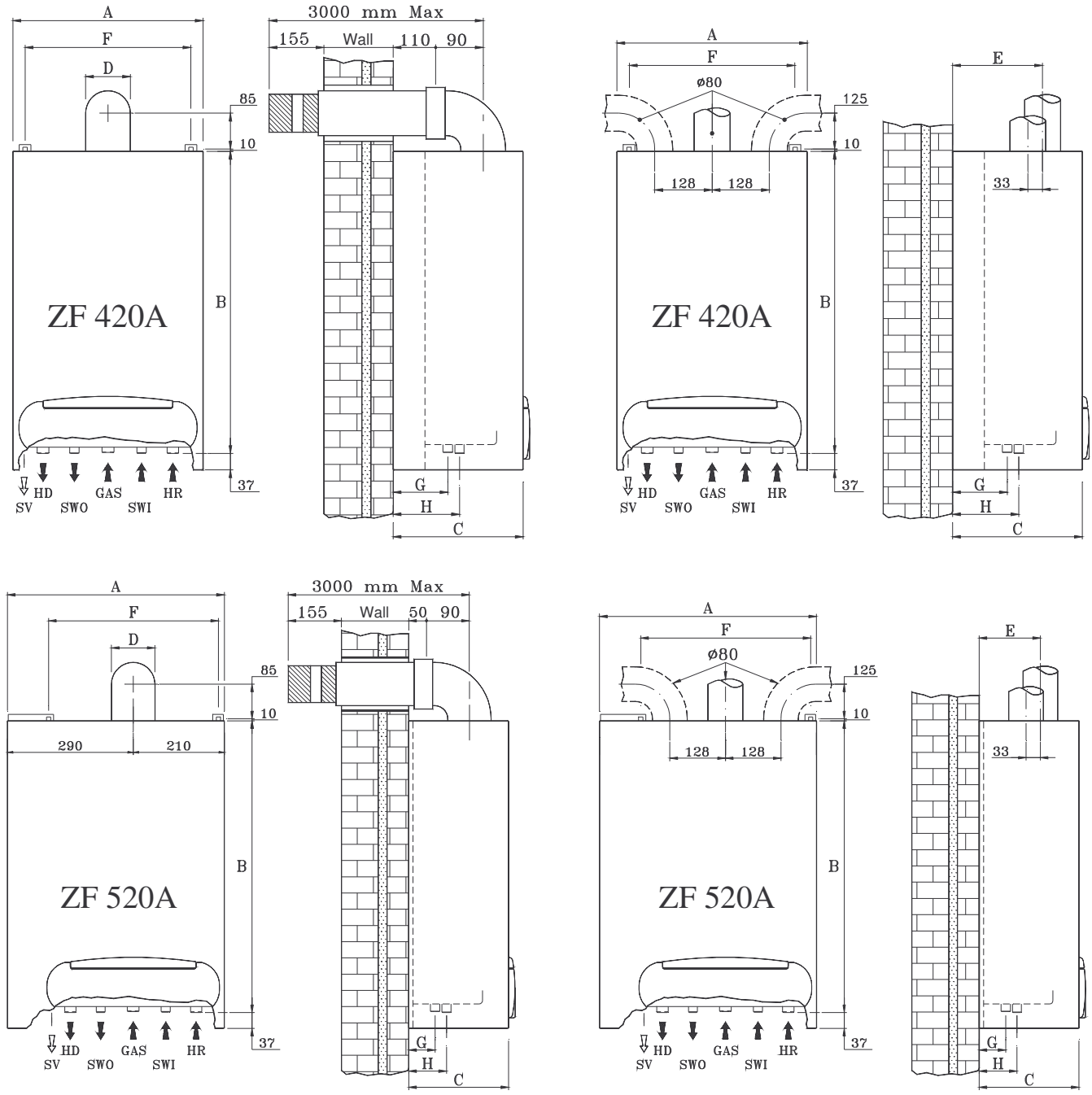


Fig. 7

Layout of fittings

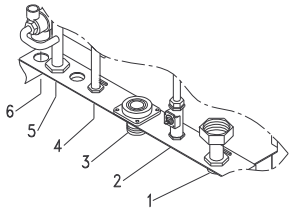


Fig. 8

KEY

1) (HR) Heating return
2) (SWI) Sanitary water inlet
3) (GAS) Gas inlet
4) (SWO) Sanitary water outlet
5) (HD) Heating delivery
6) (SV) Safety valve 3 bars (42,67 P.C.I.)

AIR SUCTION / FLUE DISCHARGE CONNECTION SYSTEMS

SUCTION AND DISCHARGE COAXIAL SYSTEM

If **horizontal** coaxial pipes are chosen, the boiler must be fitted with a coaxial curved connector (1) Fig. 9, with **vertical** coaxial pipes, must be fitted Fig. 9 connector (2).

SUCTION AND DISCHARGE WITH SEPARATE FLUE SYSTEMS configuration C_{12} C_{32} C_{42} C_{52}

Air suction and flue discharge can be effected through two separate pipes; in this case, the boiler must be fitted with a special connector for both suction and discharge. For this version too, a vertical or horizontal wall/roof terminal can be fitted by using the relative connectors (3) Fig. 10.

SYSTEM WITH JUST THE FLUE EXPULSION PIPE configuration B_{22}

Air is drawn in directly from the boiler room.

The suction connector (3) must be fitted with a protection net as given in Fig. 11.

N.B. the suction / discharge connection systems must not exceed the maximum lengths allowed and specified in the instructions (tables A.B.C. page 15).

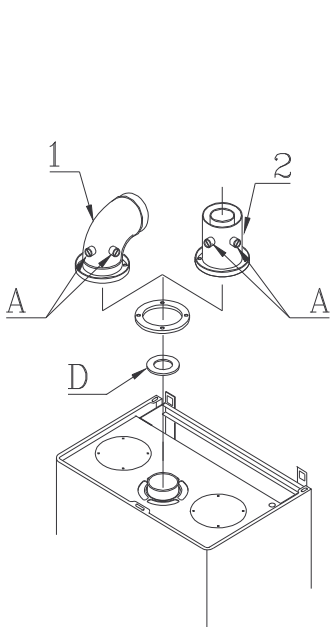


Fig.9

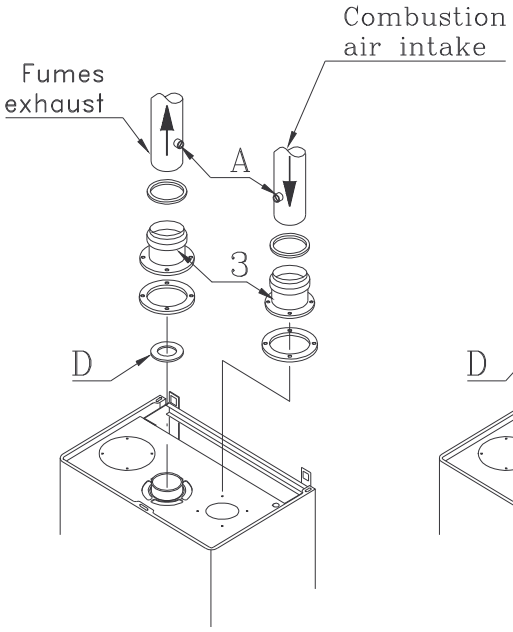


Fig.10

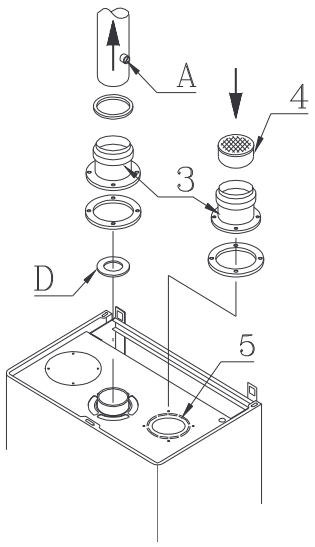


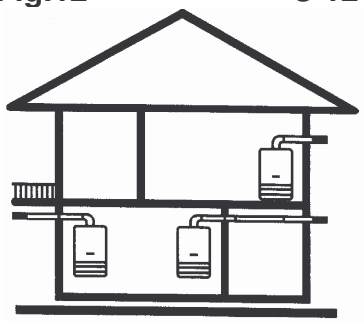
Fig.11

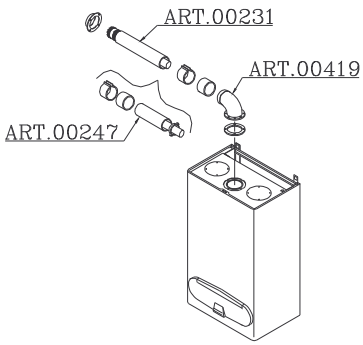
Coaxial pipe	Separate pipes	Fumes exhaust pipe duet
1) Elbow coaxial connector (Art.00419) 2) Straight coaxial connector (Art.00742) Flue gases outlet ∅ 60 mm. Air suction ∅ 100 mm. A. Drawing off point for combustion products and combustible air. D. Air diaphragm ∅ 46 mm to fit into the end of the ventilator as per table "A" page 15.	3) Suction / discharge collector kit ∅80 mm for separate pipes, complete with gaskets (Art.01156) Or: suction / discharge adapter kit ∅80/100 mm for separate pipes, complete with gaskets (Art.01184). A. Drawing off point for combustion products and combustible air. D. Air diaphragm ∅ 46 mm to fit into the end of the ventilator as per Tables "B - C" page 15.	3) Suction / discharge collector kit ∅80 mm. for separate pipes complete with gaskets (Art.01156) 4) Protection net (Art.0239) A. Drawing off point for combustion products and combustible air. D. Air diaphragm ∅ 46 mm. to fit into the end of the ventilator as per Table "B" page 15.

CONNECTION EXAMPLES FOR COAXIAL PIPES FOR TYPE "C" BOILERS (with pipes ∅60/100 mm)

This solution allows a max. length of the flue pipes of **3 metres** for the horizontal pipe and **4 metres** for the vertical pipe. Each extra 90° connector that is fitted reduces by **1 metre** the max. extension of the piping.

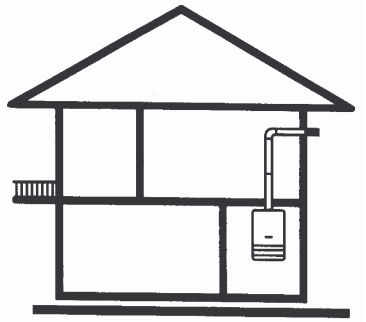
Fig.12 **C 12**

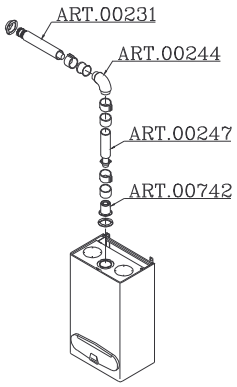




Horizontal outlet with elbow connector and extension pipe

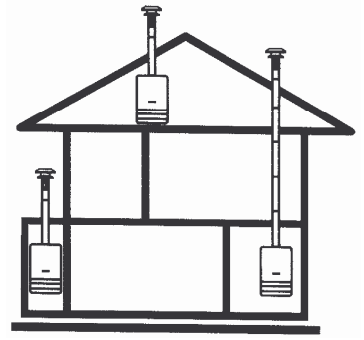
Fig.13 **C 12**

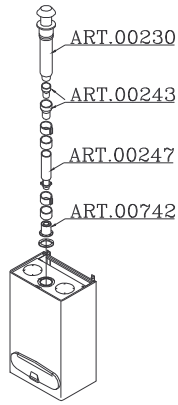




Horizontal outlet with straight connection and extension pipe

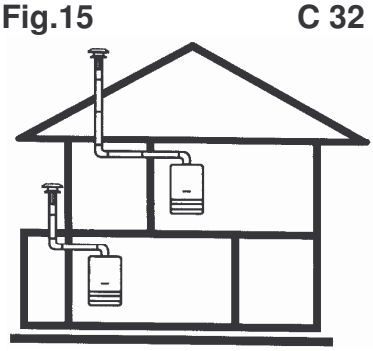
Fig.14 **C 32**

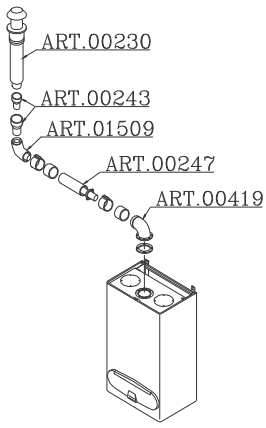




Vertical outlet with extension pipes

Fig.15 **C 32**



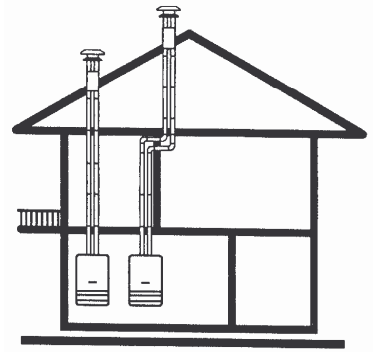


Vertical outlet with elbow connector and extension pipes

CONNECTION EXAMPLES OF SEPARATE PIPES FOR TYPE "C" BOILERS (with piping of ∅80 mm)

This solution allows a max. length of the flue expulsion pipes plus air suction of **30 metres.**
The air suction pipe however, **must not** exceed **10 metres** in length. In case of distances exceeding 10 metres (20 metres for the pipe ∅100mm) remove the drawing on the intake hole of the comburent air (Fig.11 Ref. 5).

Fig.16 **C 32**



Vertical outlet with elbow connector and extension pipes

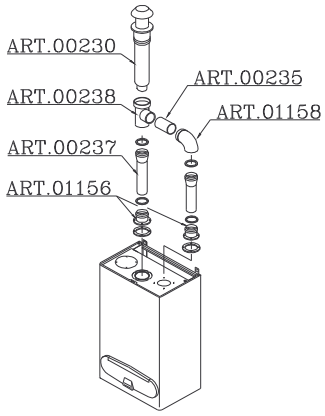
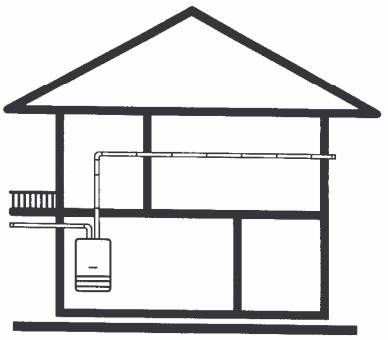
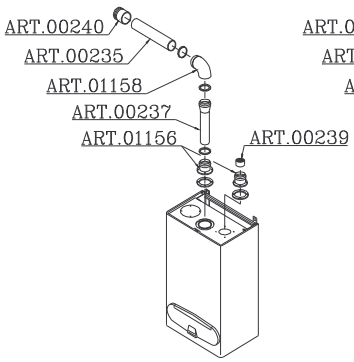


Fig.17

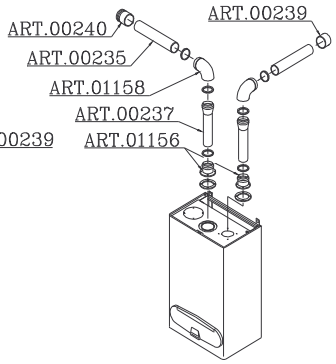


(The pipes cannot be fitted onto opposite walls)



B_{22}

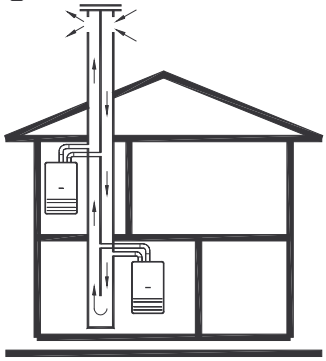
If the **B_{22}** configuration boiler is installed, part Art.00239 must be fitted to the air suction pipe (Art.01156).
.



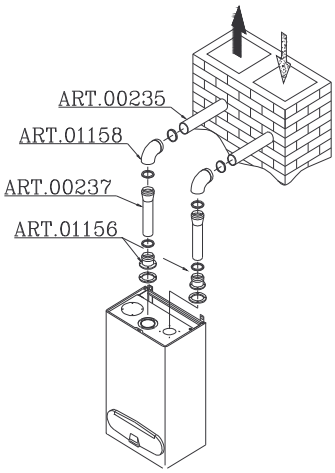
C_{52}

Wall outlets with elbow connectors, extension pipes and separate terminals.

Fig.19 **C 42**



Horizontal/Vertical flue outlet with elbow connectors and extension pipes
For the C_{42} configuration refer to EN 483 Standard, Chapter 8.2.1.4., paragraph "I".



MAXIMUM LENGTHS ALLOWED FOR THE PIPING WITH **"COAXIAL"** AIR INTAKE EXHAUST FUME SYSTEMS C_{12} C_{32} C_{42}

The maximum length of the piping for the straight coaxial pipe is **3 metres** for the horizontal pipe and **4 metres** for the vertical version.
With length less than 0.7 metre., a diaphragm of ∅ 46 mm must be fitted into the opening of the ventilator, which is supplied by us (see Figs. 9-10-11 page 12.).

Table "A"

Coaxial exhaust flue pipes diameter 60/100 mm		
	Minimum length	Maximum length
With diaphragm ∅ 46 mm	0,2 m	0,7m
Without diaphragm	0,7 m	4 m (vertical)

MAXIMUM LENGTHS ALLOWED FOR PIPING WITH **"SEPARATE"** AIR INTAKE EXHAUST SYSTEMS C_{12} C_{32} C_{42} C_{52} B_{22}

- The maximum length of the piping is obtained by adding the flue expulsion pipe to the length of the air suction pipe.
- The sum of the two lengths must not exceed 30 metres, each direction change reduces the available length in the pipes by the following ratio:
  - For 45° angles, reduction is 0.5 metre per unit (for ∅ 80 mm pipes).
  - For 90° angles, reduction is 1 metre per unit (for ∅ 80 mm pipes).

Table "B"

Separate exhaust flue pipes, diameter 80 mm C_{12} C_{32} C_{42} C_{52}		
	Minimum length	Maximum length
With ∅ 46 mm. diaphragm	0,2 m +0,2 m	5 m + 5 m
Without diaphragm	5 m + 5 m	10 m + 20 m
Only exhaust flue pipe, diameter 80 mm B_{22}		
	Maximum length	
With ∅ 46 mm. diaphragm	16 m	
Without diaphragm	23 m	

Table "C"

Separate exhaust flue pipes, diameter 100 mm C_{12} C_{32} C_{42} C_{52}		
	Minimum length	Maximum length
Without diaphragm	(above 30 m)	20 m + 70 m

N.B. **:** the air suction pipe cannot exceed a maximum distance of **10 metres** per pipe ∅ 80 mm and **20 metres** for pipes of ∅ 100 mm**.** In case of distances exceeding 10 metres (20 metres for the pipe ∅100mm) remove the drawing on the intake hole of the comburent air (Fig.11 Ref. 5).

- For a 45° bend, reduction is 0.5 metre per unit (for ∅ 100 mm pipes).
- For a 90° bend, reduction is 1 metre per unit (for ∅ 100 mm. pipes).

- The maximum lengths for the flue pipes refer to material **supplied by us**.
- SARIgas declines all responsibility for poor working of the boiler, damage to people and things caused by the use of material **not** supplied by us.
- The condensation limit at 32°F is 5 metres. (flue outlet pipe length).

IMPORTANT: if necessary, insulate the flue outlet pipe to avoid temperature drop of the fumes along the pipes. Max. drop allowed per metre of pipe must be less than 34°F.

ROOM VENTILATION FOR NATURAL DRAUGHT BOILERS, TYPE "B_{11BS} " mod. Z 420A - Z 520A
mod. *ZF 420A ZF 520A* (Class B_{22} appliances) for installation refer to pages 14,15.

These boilers must be installed in suitable environments, which guarantee the right level of combustible air intake; they must be connected to a exhaust flue outlet pipe.

For ventilation, refer to local legislation.

B_{11BS} Boilers are the open chamber type, designed for connecting to exhaust pipe for the combustion products to the outside of the room: combustible air is taken directly from the room where the boiler is installed.

Air vents on the outside walls of the boiler room:

- Must have a free net air passage that conforms to current legislation in size;
- Must be made in such a way that the inside and outside vents cannot be covered or blocked.
- Must be protected with grids or wire net, etc., but the protection must not reduce the size of the passage as indicated above.
- Correct aeration can be obtained from several vents, as long as the total net air passage corresponds to current legislation.
- If the vents cannot be made near to the floor, the section of the vent opening must be increased, as indicated in the specific standards.
- If there are other elements in the boiler room that draw in air to work, the section of the vent opening must be adequately increased.
- If the boiler is installed in a room that contains a cooking hob without safety device, as it does not use an open flame, the ventilation vents must be increased.
- The suction hood is always to be considered as an electric fan.
- An open fireplace must have its own air draft, otherwise gas appliances of the **B_{11BS}** type cannot be installed in the room.

If an external opening cannot be made, air flow from an adjacent room is allowed as long as the room is not in negative pressure due to the presence of another draft (fireplace or stove) or another suction appliance, and it is not used as a bedroom.
Zoom Z 420A – Z 520A boilers are fitted with a manual reset flue gas safety thermostat which, if there is poor draft in the flue pipe, permanently blocks the gas flow to the main burner. Therefore before beginning installation check the working features (flue pipe draft, "flue"), the sizes, such as the ∅ of the flue opening, and the inside section which must be adequate to support the output of the boiler.

If the flue safety thermostat triggers while the boiler is working, **turn off the boiler and the electric supply to the boiler,** remove the blocking clamp of the electric plug connected to the thermostat (Fig. 20), press the red thermostat rearm button with your finger. Reconnect the previously removed plug, replace the previously removed clamp and carry out a new flue draft test.

IMPORTANT: Under no circumstances must the flue safety thermostat be blocked, interfered with or removed from its original position (see Fig.20).

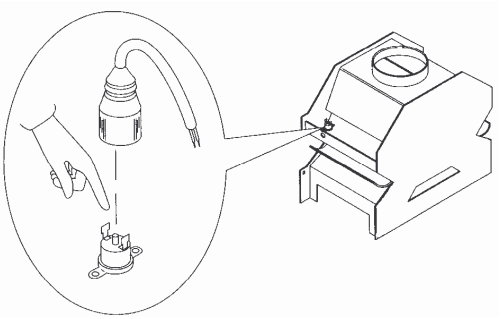


Fig.20

ATTENTION:

To ventilate the rooms fitted with mod. ZF 420A, ZF 520A boilers, with configuration **B_{22}**, refer to the specific Standards for "B" type appliances.

Follow the instructions given on pages 14-15 to install the flue pipes.

HEATING ALTERNATIVELY, A FUSED DOBLLE POLE PIPING SYSTEM

- The section of the piping depends on the methods currently used, using the curve given in the diagram (Figs. 21-22). We recommend using a capacity that keeps the temperature difference between delivery and return from the heating system between 41°F and 50°F.

Available head and capacities for heating systems at the boiler fittings

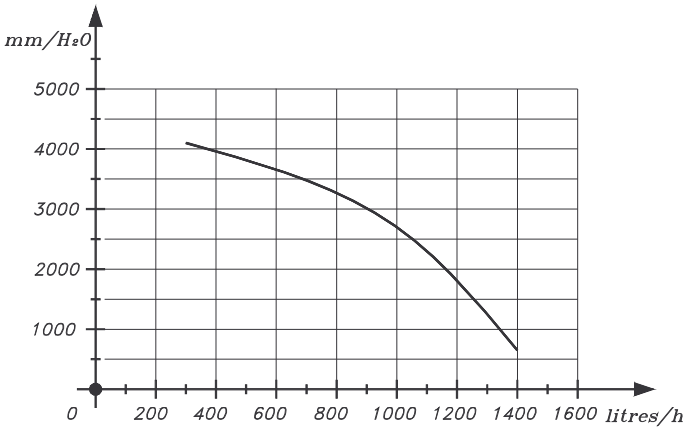


Fig.21

Diagram of pressure drops of the sanitary water circuit to the boiler fittings

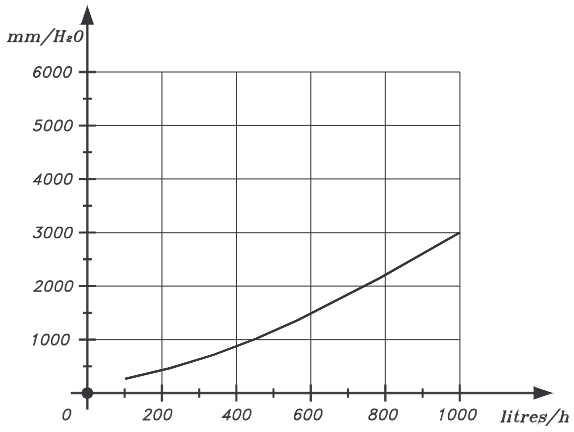


Fig.22

HEATING ELEMENTS

- **Radiators, convectors or fancoil heaters** can all be used.
- The maximum **temperature** of the boiler grants calculating the exchange surface for a temperature of 176°F. however we recommend calculating the exchange area by taking a lower temperature as reference value, thus allowing to improve comfort and reduce energy consumption.
- The **radiators** must be fitted with adjustable input connectors, which allow balancing the system, and manual bleeders on the top points.

CONNECTING THE GAS PIPES

The **section of the pipes,** between the metre and the boiler, must be of a size to reach the supply pressure given on the label. It must be possible to close the piping if the boiler is dismantled, by fixing an interception valve between the boiler and the gas pipe. For installation and the materials to be used, refer to local legislation. Ensure that the boiler is compatible with the gas supplied.

ELECTRICITY SUPPLY

The electric supply wire to the boiler must be fuse the supply at 3 A unswitched schuttered socket outlet to the requirements of BS 1363 **switch**, which guarantees complete disconnection of the supply, with contacts having an opening of at least 1/8 in. Connect to a power supply of 230~Volt 50 Hz, respecting the phase "L" and neutral "N". Consult the relative wiring diagram on page 19, Fig. 25.

- The earth wire must be connected to the earth terminal marked by the symbol ⏚.

A multiple PVC wire type H05 VV-F or H05 VVH2-F, must be used for the electricity supply wire, with a section of 3 x 0,75 mm^2, and the earth wire to the boiler must be longer than the supply wires.

N.B. If the correct polarity is not respected, the boiler will halt and the block alarm will come on (lighted button E, Fig. 1). If there is minimum electric voltage (5 -10 V), between Neutral and Earth the boiler will not work correctly.

START UP

WARNINGS BEFORE STARTING UP

Important:

- Before filling the system, check that the pump is not blocked.
- If the pump is blocked, remove the protective cap and use a screwdriver to rotate the pump rotor pin to the right and left (Fig. 23/A).
- With the gas valve closed, check that the metre does not record the passage of gas for at least 10 minutes.
- Check that all the bleed valves on the system are open.
- Open the filling valve (Fig. 23/B) until the pressure given on the pressure gauge F, Fig. 1, indicates at least 1 bar (14.22 P.S.I.).
- Close all the bleed valves in the system as soon as water starts to come out.
- At the end, close the filling valve when the pressure given on the pressure gauge is above 1.2 bar (max.1.5 bar) 17P.S.I. (max..21.33 P.S.I.): knob **A** Fig. 1, must be in position **"O"** to carry out this operation.
- Any future bleeding should be done with knob **A** in position **"O".**

Bleeding the boiler

Before filling the system with water, **loosen the plastic cap of the automatic bleeding valve** to remove the air contained inside the boiler and heat exchanger.

Do not force manually the automatic valve outlet, as the water that comes out deposits micro particles of dirt on the housing of the seal, and therefore dripping is unavoidable.

When the boiler is working, the bleeding valve cap must always be loose.

BEFORE STARTING UP THE BOILER

Carry out the following sequence, referring to figures 1-23:

1) If the gas valve is fitted to the boiler, turn it off.
2) Open the inlet cold water valve (if fitted).
3) Correctly fill the central heating system with water (see Fig. 23/B) and check that the pressure gauge (F fig. 1) gives a pressure of at least 1.2 bar (17 P.S.I.). No water must flow out from the safety valve evacuation hole (fig. 8, ref. 6).
4) Carry out the wiring connections to the boiler to 230~ Volt - 50 Hz, according to the wiring diagrams on page 19, Fig. 25. Wiring schould be in 3 core PVC cable not less than 0,75 mm^2 to BS 6500 table 16, wiring external to the boiler must be in accordance with the current I.E.E. wiring regulations and any local regulations which apply
5) **Before opening the gas valve tap, the pump must be turned for a few minutes, by turning knob A to "I" and knob B to WINTER ❄,** after about ten minutes open the gas valve tap, press button **E** Fig. 1, to start up the cycle.

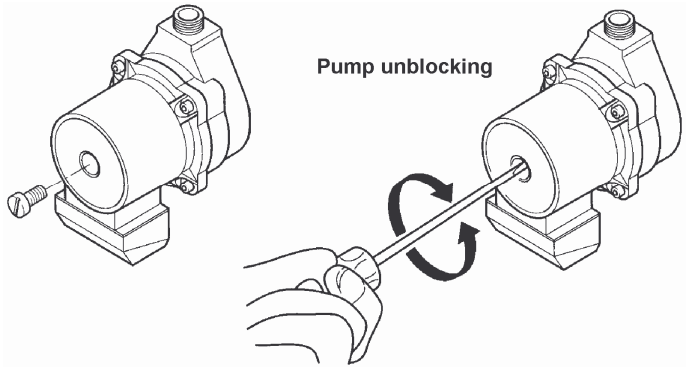


Fig. 23/A

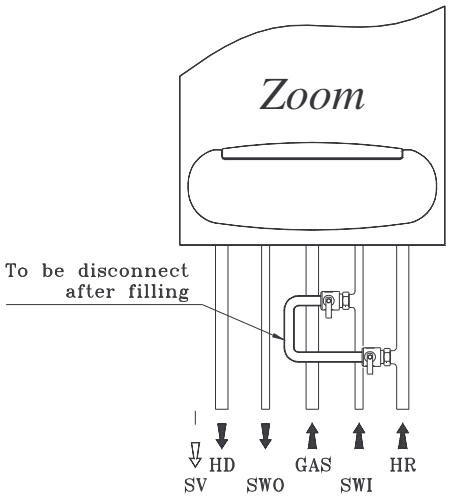


Fig. 23/B

BLEEDING THE SYSTEM

If the air has not been completely bled from the system, the boiler will not work correctly. When the boiler has been working in heating mode a few hours, bleed the system again as given on page 18.
If necessary, the system can be topped up with water.

PRECAUTIONS AGAINST FREEZING (house empty in the winter)

For short periods (12 – 24 hours)

- Turn the selector switch **A** to **'O'.**

For long winter periods

The Zoom series of boilers are fitted with an "**automatic antifreeze protection system"** in the heating and hot water circuit, which triggers when temperatures fall below 3 – 5°C.
This function activates the pump and the gas burner (at minimum rated output), **as long as** the boiler is electrically driven and the knob **A,** Fig, 1, is turned to **"I".** When a temperature of around 35°C is reached in the heating circuit, the "antifreeze system" is automatically deactivated. It is good practice, however, to protect the heating circuit with a suitable, specific chemical additive (antifreeze) in a maximum proportion of 30% of the total water volume.
If the system is not protected with antifreeze, and the gas valves must be turned off upstream and the electrical supply to the boiler turned off, empty the heating and the hot water circuits.

REGULATION WITH EXTERNAL CONTROL (optional)

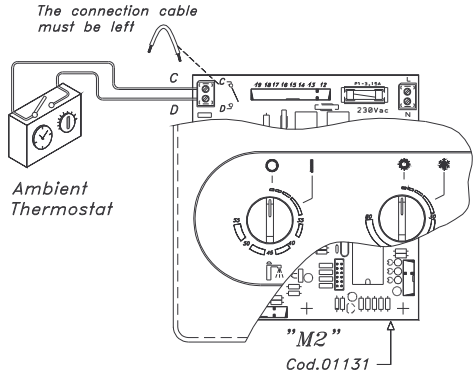
The combination boiler can be controlled by an external regulation composed by:

- **R**emote **C**ontrol; (code – set remote control 20572)
  The remote control permits the control and the regulation of the combination boiler and the faults signalling (led). The maximum distance between the combination boiler and the remote control must be 300 metres (Fig.26).
  The remote control must be linked to the combination boiler using an independent electric pipe without cables under voltage.
  The remote control is easy to install and to use and it permits to the user to check the operating faults through the luminous leds.
  There are also other leds that permits to check the consumption of the boiler in real time. It's also possible to link an ambient thermostat to the remote control (see instructions below Fig.27 and 28).
- **Ambient thermostat**; It's advisable to choose an high quality thermostat (with low differential). This ambient thermostat must be linked to the connectors **C** and **D** of the regulation circuit (Fig.24). The electrical connection must be cut off using a cable composed by two wires (in conformity with the local rules).
- **Time clock**; The time clock can be installed directly in the combination boiler using the set of components supplied by SARIgas in order to make the installation easier. The time clock must be linked to the wires **C** and **D** after having removed the existing electrical connection (Fig.29).

Warning: The wrong connection of the circuit "R1" with the circuit "M2" electrically connected, can cause permanent damages on both circuits. Before connecting the electrical connection it is advisable to verify visually the right position of both connectors.

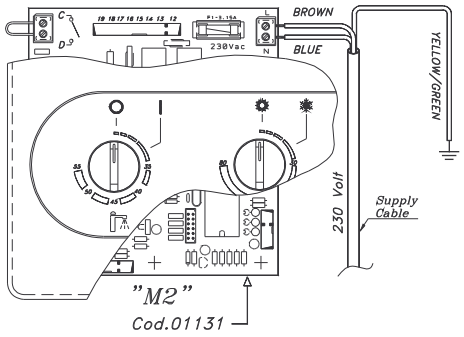
WARNING: Before making the connections it's necessary to disconnect the power supply.

WIRING DIAGRAM TO THE ROOM THERMOSTAT



WARNING: **Fig.24**
In this king of connection, the existing connection wire must be cut off from the connector C-D of the circuit **M2**.

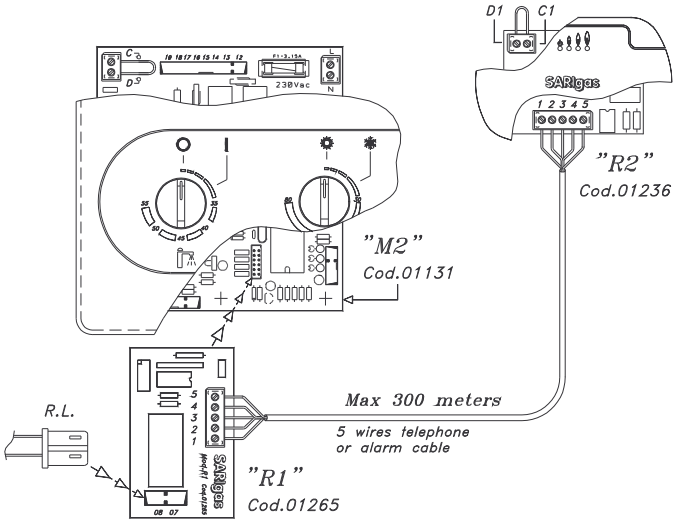
WIRING DIAGRAM TO THE POWER SUPPLY



WARNING: **Fig.25**
The connecting wire to the C-D terminal must not be powered, and must be connected to a "clean" On-Off contact.
Faulty connection of the C-D terminal: if the electric wire is powered at **230 volt** the adjustment card will burn out and consequently cancel the guarantee terms.

WARNING: Before making the connections it's necessary to disconnect the power supply.

CONNECTION TO THE REGULATION CIRCUIT **"M2"** WITH REMOTE CONTROL (OPTIONAL) Cod.20572

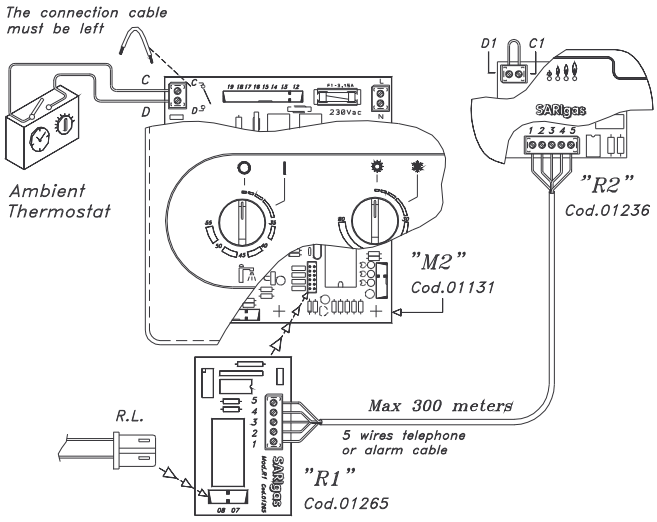


WARNING: **Fig.26**

In this type of connection, the connectors C-D must be linked to the regulation circuit **M2** and the connector C1-D1 of the regulation circuit **R2.**

Warning: Connect and disconnect the circuit **"R1"** only after having removed the existing electrical connection of the combi boiler.

CONNECTION TO THE REGULATION CIRCUIT **"M2"** WITH REMOTE CONTROL AND AMBIENT THERMOSTAT (linked to the connector C-D of the regulation cicuit **"M2"**)

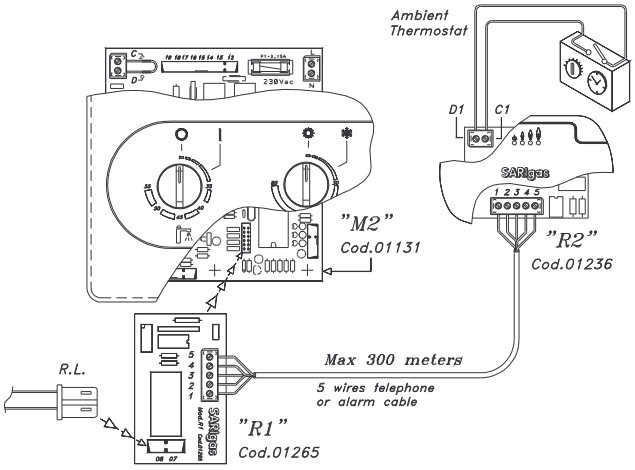


WARNING: **Fig.27**

In this type of connection, the connector C1-D1 of the regulation circuit **R2** must be linked.

Warning: Connect and disconnect the circuit **"R1"** only after having removed the existing electrical connection of the combi boiler.

CONNECTION TO THE REGULATION CIRCUIT "**M2**" WITH REMOTE CONTROL AND AMBIENT THERMOSTAT (linked to the connector C1-D1 of the regulation circuit **"R2"**)

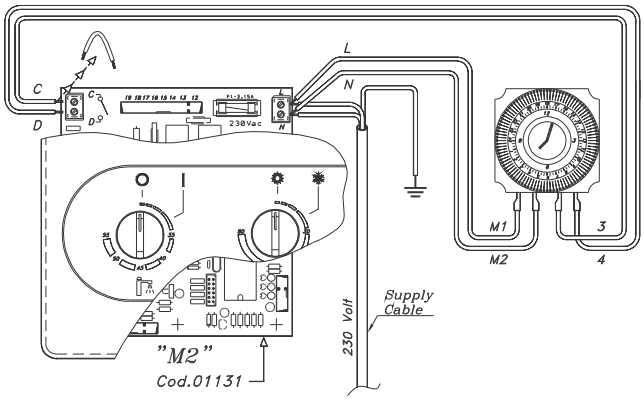


WARNING: **Fig.28**

In this type of connection, the connector C-D of the regulation circuit **"M2"** must be linked.

Warning: Connect and disconnect the circuit **"R1"** only after having removed the existing electrical connection of the combi boiler.

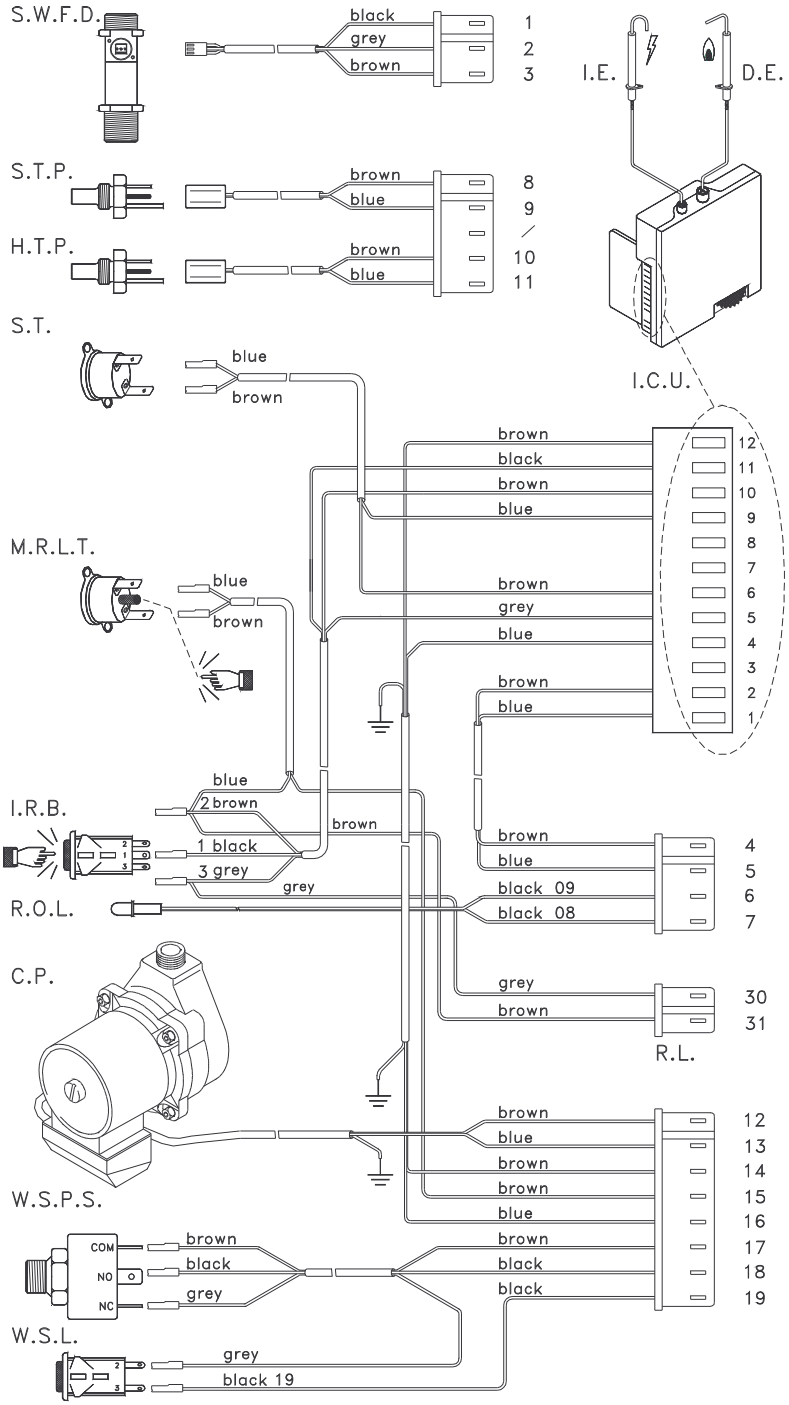
CONNECTION TO THE REGULATION CIRCUIT "**M2**" WITH DAILY TIME CLOCK Cod.20573

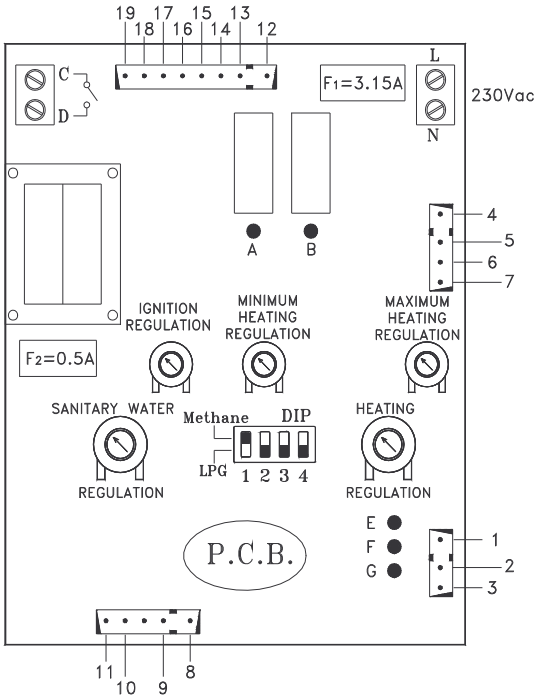


WARNING: **Fig.29**

In this king of connection the cables of the time clock (M1-M2) must be linked to the power supply of the circuit (L-N), as indicated in the drawing.

INTERNAL WIRING DIAGRAM FOR NATURAL DRAUGHT AUTOMATIC IGNITION BOILERS, SERIES *Zoom* Z 420A – Z 520A





Signals on the "P.C.B." card

A. Gas valve opening consent
B. Heating pump activation
E. Led permanently “ON”: exchanger temperature > 90°C
- Led flashing (ON/OFF). Warning threshold for antifreeze pump activation
- Led brief flashing (ON/OFF): Warning threshold for antifreeze pump and gas valve activation.

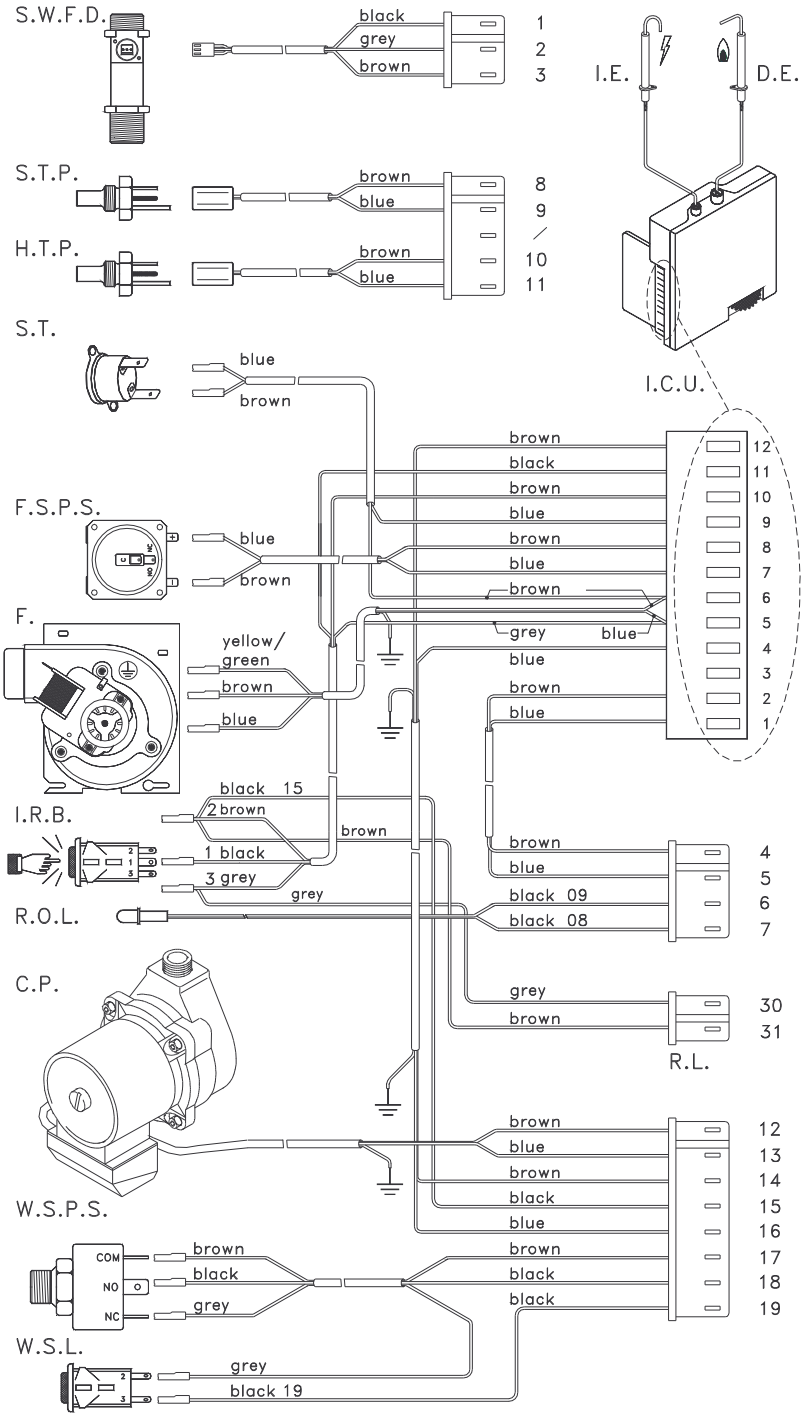
F. Led permanently “ON”: Hot water programme active.
- Led flashing (ON/OFF): Fault for the sanitary water probe.

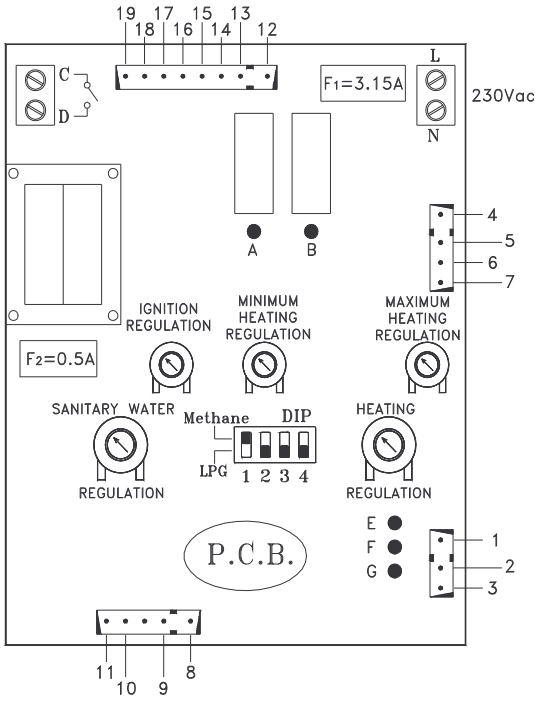
G. Led permanently “ON”: heating programme active.
- Led flashing (ON/OFF): Fault for the heating system probe.

KEY:

S.W.F.D. – Sanitary flow detector
S.T.P. – Sanitary temperature probe
H.T.P. – Heating temperature probe
S.T. – Safety thermostat
M.R.L.T. – Manual reset limit thermostat
I.R.B. – Luminous reset button
R.O.L. – Ready for operation light
C.P. – Circulation pump
W.S.P.S. – Water safety pressure switch
W.S.L. – No water signalling light
I.E. – Ignition electrode
D.E. – Detector electrode
I.C.U. – Ignition control unit
P.C.B. – Printed circuit board (Cod.01131)
R.L. – Remote light no ignition (max 3 mA)

INTERNAL WIRING DIAGRAM FOR FORCED DRAUGHT AUTOMATIC IGNITION BOILERS, SERIES *Zoom* ZF 420A – ZF 520A





Signals on the "P.C.B." card

A. Gas valve opening consent
B. Heating pump activation
E. Led permanently “ON”: exchanger temperature > 90°C
- Led flashing (ON/OFF). Warning threshold for antifreeze pump activation
- Led brief flashing (ON/OFF): Warning threshold for antifreeze pump and gas valve activation.

F. Led permanently “ON”: Hot water programme active.
- Led flashing (ON/OFF): Fault for the sanitary water probe.

G. Led permanently “ON”: heating programme active.
- Led flashing (ON/OFF): Fault for the heating system probe.

KEY:

S.W.F.D. – Sanitary flow detector
S.T.P. – Sanitary temperature probe
H.T.P. – Heating temperature probe
S.T. – Safety thermostat
F.S.P.S. – Fan safety pressure switch
F. – Fan
I.R.B. – Illuminated reset button
R.O.L. – Ready for operation light
C.P. – Circulation pump
W.S.P.S. – Water safety pressure switch
W.S.L. – No water signalling light
I.E. – Ignition electrode
D.E. – Detector electrode
I.C.U. – Ignition control unit
P.C.B. – Printed circuit board (Cod.01131)
R.L. – Remote light no ignition (max 3 mA)

NOTE

Authorized Servicing Centre

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